

So, What's Behind Adult English Second Language Reading?

Gail August
Hostos Community College

Abstract

This study investigated the relationship of first language (L1) grammatical knowledge to English second language reading (ESLR), with the objective of understanding this relationship in the context of the transfer of L1 skills to second language (L2) academic processes. Fifty-five adult, native Spanish-speaking English-language learners were given 4 assessments. Spanish reading accounted for 10% of the variance of ESLR, supporting the Linguistic Interdependence Hypothesis, and English grammar accounted for 8% of the variance, supporting the Linguistic Threshold Hypothesis. The results imply that transfer from the L1 might operate differently in adult ESLR than it does with children. An ESLR adult model is proposed, which predicts that some ESLR students will require a curriculum that provides a highly intensive focus on L2 language, grammar, and reading skills.

Learning to read in a second language (L2) is different from learning to read the first time around. Although people have a great deal of information about the processes involved when children learn to read in their native language (L1), we don't have good empirical data or well developed theoretical models to describe what kinds of skills are involved in good English second language reading (ESLR), particularly when this population is comprised of adults rather than children (Snow, 2002).

When children learn to read, they must acquire important basic reading skills, such as phonological awareness, letter recognition, word recognition, as well as the ability to interpret and create meaning by their comprehension of sequences of written words (Adams, 1990). ESLR readers, individuals who are learning English and simultaneously learning to read in the new language, are engaged in an experience which is very different from child L1 reading acquisition. One important difference is that in ESLR, many educators generally

assume that a large number of L1 reading skills will not need to be relearned, but will naturally transfer to the L2 process (Bialystok, 2002; Collier, 1992; Hakuta, 1990). However, without empirical evidence to support this assumption, it is not possible to determine precisely which of the L1 skills actually transfer, or to understand how these transferred skills affect ESLR development. Moreover, because many English language learners are of college age, it is also necessary to examine the impact of L1 skills on ESLR when adults, rather than children, learn to read in a new language.

This investigation concerns the relationship of L1 and L2 grammatical knowledge, and L1 reading comprehension skill to English reading comprehension. The participants in the study were Spanish-speaking adult students, who were students of English as a Second Language (ESL) at the community college. One of the objectives of this study was to find answers to three basic questions and to examine these answers in the context of theories which describe L1/L2 transfer:

- 1) What is the relationship of Spanish grammatical knowledge to adult ESLR?
- 2) What is the relationship of Spanish reading ability to adult ESLR?
- 3) Do both of these Spanish skills have an equally important relationship to adult ESLR?

The fourth question, which frames a second objective of this study, concerns the relationship of a specific L2 skill, grammatical knowledge, to ESLR.

- 4) What is the relationship of L2 grammatical skill to adult ESLR?

Motivation

Reading ability is important for all students, and poor reading skills have been identified as a major factor in poor academic achievement (Intersegmental Committee of the Academic Senates, 2002). Adult students, like all students, need good reading comprehension skills for success. However, given the importance of reading in an academic environment, and the vast resources dedicated to understanding the processes involved in teaching children to read, it is surprising that there is little concrete research devoted to the development of good reading comprehension for adult readers (Snow, 2002). But if there is little research about L1 adult reading comprehension, there is even less about adult ESLR (Bernhardt, 1991, 2000; Fitzgerald, 1995; García, 2000). This study investigates the relationship of certain L1 skills to successful adult ESLR, with the larger objective of contributing to a base of data and theory about reading and transfer in adult ESLR.

The sample chosen for this study was deliberately selected to match the demographics of the Spanish-speaking ESL population in the day program at the community college where it was conducted. These students, who are at

intermediate and advanced levels of ESL, come from a variety of Spanish speaking countries and range in age from 18 to 55, with 30 being the average. Eighty percent of the participants were women. Approximately half of the students have been in the United States for 1 or 2 years; the rest have been living here for 8 to 15 years. Most of the ESL students have a high school degree from their own country or have earned a high school equivalency degree in their native language. A few are graduates of bilingual programs in the U.S. high school.

Although these students were highly motivated to acquire the necessary language skills for success in their educational and career objectives, many struggled with reading and writing, and so mirror some of the problems faced by other Spanish speakers in the U.S. educational system. Spanish-speakers of L2 English constitute about 75% of the L2 population, the largest percentage of minority-language students in the United States, as well as the largest growing minority-language population, currently accounting for about 13% of the national population. In 2001, 26% of Hispanics aged 18–21 were enrolled in college, compared to 44% for Whites. For persons 25 years old and over, 11% had completed college, compared to 27% for Whites. Only 8% had obtained a bachelors' degree, and an additional 3% had advanced degrees (Education Commission of the States [ECS], 2004; Hispanic Association of Colleges and Universities, 2005). In fact, the educational underachievement of this population has been referred to as an “urgent and perplexing” national problem (ECS, 2004). Empirical data and the development of theory applicable to the educational processes of this student population are critical to the understanding of a challenging educational situation.

Theoretical Frameworks of Transfer

Three of the four research questions framing this study concern transfer. For the purpose of this discussion, transfer will be assumed to be the process in which previous knowledge or experience influences newly acquired knowledge. In the literature on bilingualism, there are two different kinds of hypotheses to describe L1/L2 transfer. The Linguistic Interdependence Hypothesis (LIH) claims that academic skills such as ESLR are heavily influenced by the transfer of L1 skills. The LIH, which is generally used as a justification for bilingual education, presumes that cognitive abilities developed in the L1 (those skills underlying academic language pursuits such as reading and writing) can easily be transferred to the L2 (Bernhardt & Kamil, 1995; Cummins, 1991; Snow, 1990). From the theoretical perspective of LIH, an individual with weak ESLR skills is an individual with a general reading or language problem, common to both the L1 and L2. Under this framework, a weak ESLR reader would be best served by a curriculum which emphasizes strengthening the academic and language skills in the L1 in order to build a

solid cognitive-linguistic base for the emerging L2. Another hypothesis, The Linguistic Threshold Hypothesis (LTH) looks at academic skills such as ESLR from the perspective of the L2 language development. According to the LTH, ESLR demands a critical level of L2 development, and regardless of L1 proficiency, until this threshold is reached, the individual will inevitably have weak ESLR skills (Alderson, 1984; Clarke, 1980). LTH looks at ESLR from the L2 perspective, and so, low ESLR proficiency is conceptualized as a L2 problem rather than a L1 or general language problem. Under this framework, the problem of weak ESLR would be best addressed by a curriculum which emphasizes further developing L2 skills.

Both hypotheses have theoretical limitations, and may operate differently in children and adults. The LIH hypothesis does not specify the cognitive mechanisms for transfer or elaborate on which skills transfer or how they transfer, and has not addressed how transfer might differ for individuals at various levels of educational attainment and maturity. Moreover, because supporters of the LIH attribute L2 academic difficulties to weak L1 skills, the logical solution to the problem would be to increase L1 instruction. This approach, however, is not always practical, and is more suited to children than adults. The LTH logically incorporates the LIH because once the L2 threshold is attained, the L1 skills are able to transfer, thus augmenting the development of the L2. The limitations of the LTH are that it postulates a threshold but does not provide empirical evidence to show what this critical level of L2 proficiency might be. Moreover, it cannot be applied to an individual with weak L1 proficiency, and so has little L1 knowledge available for transfer.

Studies with Children

Educators who advocate some form of bilingual education are motivated by the LIH, claiming that academic skills developed in the L1 transfer to equivalent processes when students learn an L2 (August & Hakuta, 1998; Cummins, 1991). Bialystok (2002) proposes that both the ability to read and some of the necessary skills that prepare children for reading transfer across languages. According to Hakuta (1990), "One of the most fundamental assumptions underlying the efficiency of bilingual instruction is that skills and knowledge learned in the native language transfer to English" (p. 7).

There are some studies with children that are cited as evidence for the positive effects of bilingualism and the advantages of bilingual education, supporting LIH claims of L1/L2 transfer of certain skills. Hakuta's (1987) longitudinal study with Puerto Rican children showed that as students became more proficient bilinguals, skill at metalinguistic tasks in L1 increasingly correlated with those skills in L2. These results suggest that abilities developed in one language may transfer to comparable skills in the new language. In another study, Hakuta (1990) found that young children were able to transfer

conceptual knowledge, specifically understanding of temporal and spatial relations, from Spanish to English. In a recent longitudinal study of young Spanish-speaking children, August, Calderon, and Carlo (2002) demonstrated cross-language transfer of phonological awareness, word reading, word knowledge, and reading comprehension.

Recently researchers have begun to look at one area of knowledge, phonological awareness, investigating how this particular ability transfers from L1 to L2 in children. Phonological awareness is a metalinguistic skill which is essential to the understanding of the relationship between sounds and symbols, and is thus believed to be critical to the decoding of words (Pang & Kamil, 2004). It has been shown to be one of the best early predictors of L1 reading skill and literacy (Juel, Griffith, & Gough, 1986). Because of the key role it plays in decoding words and its close relationship to L1 reading skill, it is not surprising that phonological awareness has become an important subject for research attention.

Many studies with young children have been able to show cross-linguistic transfer of L1 phonological awareness skill to L2 reading. In a review, Geva and Wang (2001) showed that individual differences in phonological processing skills, verbal memory, and rapid naming predict the development of reading for children in both their L1 and L2. In a longitudinal study of children learning to read in a L2, Comeau, Cormier, Grandmaison, and Lacroix (1999) demonstrated evidence of the transfer of phonological awareness skills between French and English. In a correlational study with first graders, phonological awareness in Spanish predicted word and pseudo-word recognition in English (Durgunoglu, Nagy, & Hacin-Bhatt, 1993). In the previously cited study, August, et al. (2002), Spanish phonological awareness skill at the end of grade two predicted English reading ability for the next year. Other studies have produced similar results in alphabetic languages (Bruck & Genesee, 1995; Cicero & Royer, 1995; Riccio, et al., 2001), and there is also evidence of the transfer of phonological awareness skill to English from non-alphabetic languages like Farsi (Gholamain & Geva, 1999) and Cantonese (Gottardo, Yan, Siegel, & Wade-Wooley, 2001).

Grammar and Reading

This study involves grammar and reading, two topics that would be presumed to be prominent in theories and research concerning the transfer of linguistic knowledge and the attainment of academic skill. However, these two areas, as well as their relationship, have not received a great deal of research attention. Given the intimate connection between knowledge of a language and knowledge of the grammar of that language, it is difficult to understand why transfer research has not yet focused on grammar. This is particularly surprising because both the LIH and LTH theoretical frameworks implicitly

include grammar, as they are built upon the assumption that L1 knowledge encompasses a wide range of linguistic and cognitive abilities which, under certain circumstances, will be available for transfer. Moreover, those theorists and educators who advocate the importance of L1 language proficiency in bilingual education and L2 achievement generally imply that grammatical knowledge is an integral part of that L1 language proficiency (August & Hakuta, 1998; Collier, 1992; Cummins, 1991). Since both the LIH and LTH theoretical frameworks were developed to describe how L1 linguistic knowledge might affect L2 academic skills, it is unfortunate that so little research attention has been directed to the investigation of the cross-linguistic influence of L1 grammatical knowledge on L2 reading (Bernhardt, 1991; Fitzgerald, 1995).

Grammar Research

Although there is a disappointing lack of research on the cross-linguistic transfer of L1 grammatical skill to L2 reading ability, there is some important within-language research demonstrating the relevance of syntactic abilities to reading and pre-reading skills in monolingual children. It has long been recognized that syntax forms an essential part of the cognitive abilities underlying general reading skills, and more particularly, those underlying the comprehension of connected text (Adams, 1980; Balota, Flores d'Acais & Rayner, 1990). Several studies of monolingual children have been able to show an explicit relationship between certain syntactic structures and good reading ability (Gaux & Gombert, 1999; Waltzman & Cairns, 2000). Some researchers have argued that syntactic processing deficits contribute in a large part to poor reading attainment (Bentin, Deutch & Liberman, 1990). Syntactic knowledge is particularly important to college level adults who must read academic texts, as grammatical structures convey essential information, leading the reader to the correct interpretation of the words and sentences (Adams, 1980).

Adult Reading Studies

There are very few studies on the topic of adult ESLR. In a comprehensive review of ESLR research literature from 1980 to 2000, only 47 of the studies published during those twenty years were based on students over 16 years of age, and no more than half of those 47 studies concerned adults in college-based programs (Burt, Peyton, & Adams, 2003). Other reviews also comment upon the limited research literature (Fitzgerald, 1995; García, 2000; Pang & Kamil, 2004; Snow, 2002). Bernhardt (1991) expresses her reaction to the “meager” database as “despair” (p. 67).

There are, however, a small number of within-language adult ESLR grammar studies which have investigated the relationship of L2 grammar to L2 reading. In two early studies, Klederman (1974) and Stephens (1977) found that students

trained to focus on specific L2 grammatical structures improved in L2 reading comprehension. More recently, Berkemeyer (1994) reported a relationship between knowledge of L2 pronouns and anaphoric relations and ESLR. Layton, Robinson, and Lawson (1998) investigated the relationship between syntactic awareness and reading comprehension with advanced readers and adults. However, the results of this study were inconclusive as they showed that training improved syntactic awareness, but this improvement did not affect general reading ability.

There are also a few cross-linguistic studies with students ranging from fifth graders to adults that establish a promising direction for future ESLR transfer research. Royer and Carlo (1991) showed that Spanish language reading performance in the fifth grade correlated with English reading performance the following year. García-Vázquez, Vázquez and López (1997) found that Spanish reading and writing correlated with English achievement scores for Hispanic middle and high school students. In a study with English-Hebrew readers, reading ability was shown to be consistent across both languages (Geva, Wade-Wooley, & Shany, 1997). Other studies involving students of various ages found that good bilingual readers used the same strategies for comprehending both L1 and L2 (Jiménez, García, & Pearson, 1995, 1996; Koda, 1990, 1998; Langer, Bartolomé, Vázquez, & Lucas, 1990).

Adults and Transfer

The L1/L2 transfer studies, particularly the phonological studies, give compelling support for the LIH hypothesis, especially as it applies to children. As a response to the evidence of cross-linguistic effects of phonological awareness, several researchers have concluded that this particular metalinguistic skill is a generic skill that supports reading development in any language (August et al., 2002; Geva & Verhoeven, 2000), including non-alphabetic languages (Gholamain & Geva, 1999; Ho & Bryant, 1997). Durgunoglu and Oney (1999) suggest that the evidence of phonological transfer is so consistent in these cross-linguistic studies that the role of phonological awareness in predicting decoding ability may be more than a language specific mechanism, and could be better understood as a universal cognitive mechanism.

However, in spite of the robust cross-linguistic evidence from the phonological studies, there is still a great deal to learn about the transfer of skills from the L1 to the L2. For example, there are not specific data about how transfer occurs, what skills or strategies transfer, the role of instruction in facilitating transfer, the transfer of processing skills, or the effect of non-language specific skills such as memory (August et al., 2002; García, 2000; Geva & Verhoeven, 2000). More research is also needed to understand how transfer studies with young children might be applied to adults. August et al. (2002) observed

Questions remain concerning the specification of the cognitive mechanisms for transfer as well as the *developmental parameters* [italics added] that constrain transfer effects.... Furthermore, the processes involved in the transfer may differ depending on the age and/or level of a child's first-language literacy development. (p.13)

Ultimately, there are many reasons why it is difficult to extrapolate from children's studies to conclusions about adult literacy. With adults, there may very well be "developmental parameters" that imply important differences in the relationship of L1 to L2 acquisition and its relevance to academic processes. Although the research on phonological awareness gives clear evidence of transfer of an essential basic reading skill, these studies involve children. According to these studies, the most pronounced phonological transfer effects have occurred with very young subjects, with very little evidence of the transfer of phonological knowledge as the children got older and became more skilled readers (Comeau et al.,1999; Hakuta, 1987). Also, research with children must inevitably assess basic skills, while adult ESLR generally concerns academic literacy, the ability to read complex materials. Ultimately, we still have a great deal to learn about the variables which predict progress for more mature readers, when skills such as fluency and language comprehension become more important than basic decoding skills.

There are two studies which specifically investigate the transfer of linguistic and cognitive skills in adults. In a small study with community college students, Jiang and Kuehn (2001) found that immigrant students who arrived when they were older made better academic progress than those who had come to this country when they were younger. The explanation for this difference was that older immigrants had had a longer period to be educated in their L1 than those who came to the United States at a younger age. In contrast, although the students who came at an earlier age had more advanced English oral skills, they had less L1 academic language experience. This study produced results which support the LIH, but because it consisted of only 22 subjects, is limited by the small sample. A larger study by Bernhardt and Kamil (1995), based upon 168 adult native English speakers learning a foreign language, provided evidence for both the LIH and LTH. Regression analyses showed that L1 literacy knowledge contributed about 10–16% of the variance of ESLR, while L2 linguistic knowledge contributed 30–38% of the variance. The L1 variance provides evidence for the LIH in ESLR, while the L2 variance provides even more evidence for the LTH. The results of this study provide interesting evidence for both the LIH and LTH hypotheses. Also, this adult study suggests that the balance between the LIH and LTH hypotheses might be somewhat different for older ESLR readers, with L2 skills accounting for a larger proportion of the L2 performance than the L1 skills.

Method and Materials

This study was conducted with 55 adult, native Spanish-speaking ESL students ($N = 55$) at a community college. The participants were given four assessments: (a) English reading comprehension, (b) English grammar, (c) Spanish reading comprehension, and (d) Spanish grammar.

The Stanford Diagnostic Reading Test, Fourth Edition, Form K, Purple Level, was the assessment for English reading comprehension (Karlsen & Gardner, 1996). The test consists of nine passages of three to four paragraphs, each followed by six multiple-choice questions, and must be completed in 50 minutes. This standardized reading test was selected because it includes norm-referenced information to assess reading performance from kindergarten to junior college and because it is similar in format to the tests that the students in this study will take in order to exit ESL and enter college level English classes. The rationale for selecting the Purple Level, generally designated for Grades 4.6–6.5, was based upon Chall's (1983) Stages of Reading, which identify Grades 4 to 6 as the period when reading comprehension becomes the most important skill, the time when the reader must shift from the process of learning to read to the process of reading to learn.

The Michigan ESL Placement Test, Form A, was used to test explicit knowledge of English grammar (Spann & Stowe, 1972). This assessment contains 30 items, consisting of a written prompt followed by four written multiple-choice answers, testing knowledge of quantifiers, sentence connectors, verb tense, question words, articles, prepositions, word forms, adjectives, pronouns, relative pronouns, adverbs, and auxiliaries.

The University of Wisconsin College-Level Spanish Placement Exam, Form 901, was used to assess L1 reading comprehension proficiency and L1 grammatical knowledge (Armendariz et al., 1990). This test consists of a reading comprehension section with reading passages and 39 multiple choice items, and a grammar section, with 38 multiple choice items. Participants had 60 minutes to complete both parts of the exam. These Spanish assessments were selected because the reading and grammar formats were similar to the corresponding English assessments. Also, since the Spanish speakers in this study come from several countries and may have been exposed to a variety of Spanish usage patterns, it was decided that an assessment designed for Spanish foreign language students would be the best choice to assure that the Spanish language passages and prompts were equally accessible to all of the participants in the study.

Statistical Analyses and Results

For all four tests, scores were based upon the total number of correct answers on each test. The descriptive measures (see Table 1) were the total number of correct answers, the mean, the percentage of correct answers for each task, and the standard deviation. Correlations (see Table 2) and simple linear regression analysis were used to show relationships between the variables. Three simple linear regression analyses were conducted, with ELSR being the dependent variable, and Spanish grammar, Spanish reading, and English grammar being the respective independent variables. For the first regression, $R^2 = .002$, adjusted $R^2 = -.017$, $F = 0.112$, $p = .739$, indicating that Spanish Grammar does not explain any ESLR variance; for the second regression, $R^2 = .116$, adjusted $R^2 = .099$, $F = 6.845$, $p = .012$, indicating that Spanish reading explains 10% of the variance of ESLR; for the third regression, $R^2 = .095$, adjusted $R^2 = .078$, $F = 5.582$, $p = .022$, indicating that English grammar explains 8% of the variance of ESLR. In addition, a simple linear regression was conducted to evaluate the relationship between Spanish reading and Spanish grammar. With Spanish reading as the dependent variable and Spanish grammar as the independent variable, $R^2 = .102$, adjusted $R^2 = .084$, $F = 5.871$, $p = .019$, indicating that Spanish grammar accounts for 8% of the variance of Spanish reading.

The participants scored 81–90% correct on the Spanish assessments for reading comprehension and grammar, and about 46% correct on the corresponding English reading comprehension and grammar assessments. The correlation and regression results show that both Spanish reading and English grammar are important skills in ESLR. Spanish reading correlated with ESLR (.341), and accounted for 10% of the variance of ESLR ($p = .012$). English grammar correlated with ESLR (.309) and accounted for 8% of the variance

Table 1

Descriptive Statistics

Tasks	Total	Mean	Percent correct	Standard deviation
Spanish grammar	38	33.78	88.9	7.84
Spanish reading	39	31.69	81.3	4.97
English grammar	30	14.04	46.8	4.50
ESLR (English reading)	54	24.44	45.3	9.47

Table 2

Correlation Matrix

Variables	English grammar	Spanish reading	Spanish grammar
ESLR English reading	.309*	.341*	-.046
English grammar	-	.080	.051
Spanish reading	-	-	.319*

* $p < .05$

($p = .022$). The correlation and simple regression results did not produce evidence of a relationship of Spanish grammar to ESLR. However, according to the data, Spanish grammar is an important skill for Spanish reading, showing a correlation of .319 and accounting for 8% of the variance ($p = .019$) of Spanish reading.

Discussion of Results

The data provides evidence for L1 transfer in adult ESLR, demonstrating support for both the LIH and LTH hypotheses. Spanish reading, which accounts for 10% of the variance in ESLR, gives evidence of transfer from L1, supporting the LIH. English grammar, which accounts for 8% of the variance in ESLR, gives evidence for the importance of L2 skills, supporting the LTH. The results of the linear regression analyses produced relatively small effect sizes (10% and 8%); however, they must be understood in the context of ESLR as a multifaceted process which involves a large number of skills and may be influenced by many different factors such as reading experience, reading strategies, personal motivation, etc. The purpose of this study was to isolate the particular skills of grammar and L1 reading, it was successful in showing that they are significant components of ESLR.

The results of the correlations and regressions do not give direct evidence for the cross-linguistic transfer of L1 grammar to reading in adult ESLR, as the relationship was not significant. However, the Spanish grammar regression analyses demonstrate that Spanish grammar accounts for 8% of the variance of Spanish reading, and the ESLR regression analyses show that Spanish reading does, in fact, transfer to ESLR. The role of Spanish grammar in the relationship between Spanish reading and ESLR is an area which needs more in-depth investigation; however, these data clarify some of the details about the transfer of L1 skill in ESLR, showing that L1 grammar has an important impact on L1 reading, which, in turn, has an important relationship to ESLR

Grammar L1 >>>	Reading L1 >>>	Reading L2 (ESLR)
	Grammar L2 >>>	Reading L2 (ESLR)

Figure 1. Relationship of grammatical knowledge to ESLR.

(see Figure 1). Also, the empirical data give evidence of the association between grammar and reading within a language; in both cases, the grammar of the language accounted for 8% of the variance of the reading in that language.

The results support both the LIH and LTH hypotheses. However, they suggest that the transfer from the L1 might operate differently in adult ESLR than it does with children, and that the application of the LIH and LTH theories might also be somewhat different. In separate individual regression analyses, the two significant skill areas that were investigated in this study, Spanish reading (representing L1 skills) and English grammar (representing L2 skills), accounted for 10% and 8% of the variance. Although it is not possible to make a direct comparison of the contributions of English grammar and Spanish grammar, it is likely that the results for Spanish reading (10%) might represent a large portion of the total variance for L1 skills, while the results for English grammar (8%) can only explain a small part of the total variance for L2 skills. This distinction in what the two skills might represent in ESLR suggests that when constructing a theoretical model, it would be reasonable to assume that L2 skills account for substantially more variance than the transferred skills from the L1. The current study only addressed the L2 skill of grammar; it is plausible that a larger study, including a wider range of L2 skills, would provide evidence showing that L2 skills account for a much greater portion of the variance. This was the result of the study by Bernhardt and Kamil (1995), which found that L2 skills accounted for more variance than L1 skills, with L2 linguistic knowledge accounting for 30–38% of the variance and L1 literacy knowledge accounting for much less, about 10–16%. On the other hand, it would be difficult to envision a study which would produce the opposite result, with data giving evidence of more than 10% of ELSR accounted for by L1 skills. Reading comprehension is a global skill, encompassing many other component skills from the reading language, such as phonological and orthographic, vocabulary, and grammatical knowledge. This study shows that just one of those skills, grammar, accounts for 8% of the variance of ESLR. However, it can safely assumed that Spanish reading, which accounts for 10% of the variance, already includes many Spanish component skills (as it has already been shown to include Spanish grammar) and therefore represents the total variance for L1 transfer.

General Discussion and Model

When children begin school and learn to read, they acquire basic reading and language skills systematically, sequentially, and at the same time as they are developing cognitive maturity. The acquisition of L2, however, does not necessarily happen systematically in the classroom, and can be acquired in many different ways and in many different contexts. ESL adults come to the ESLR process with a wide range of reading skills from the L1, various kinds of L1 and L2 educational experiences, and adult cognitive abilities. Accordingly, learning to read in a second language is a different process from learning to read the first time around, and models to describe adult ESLR may not be the same as those created to describe child ESLR.

This study was conceived as a small step in understanding adult ESLR by providing empirical data and evidence for theoretical hypotheses. Considering the results of this study, a three-level adult ESLR model is proposed: (1) L2 language skills, (2) L1 language and reading skill, and (3) additional L2 academic literacy skills (see Figure 2). Level 1 consists of those L2 skills necessary to satisfy a hypothetical threshold, making it possible for transfer to occur, as suggested by the LTH hypothesis. Level 2 consists of L1

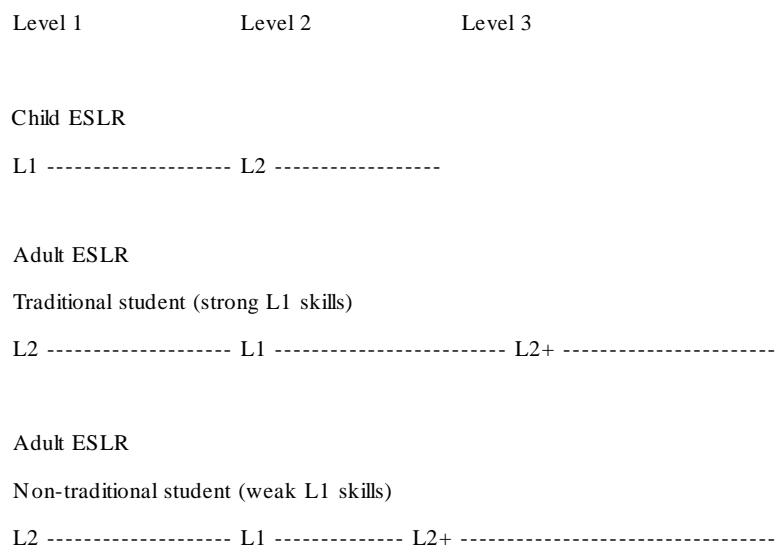


Figure 2. Three models of ESLR.

Note. This figure presents a schematic approximation of the proportion of each skill area in the three models. Child ESLR has no L2+ and, consequently, no Level 3. The two Adult ESLR models represent different proficiencies of L1. The diagram shows that a non-traditional student would require more time and effort to develop the L2+ in order to achieve the same Level 3 proficiency as the traditional student.

skills, accounting for the transfer from L1, as suggested by the LIH hypothesis. Level 3 consists of additional L2 academic literacy skills, encompassing abilities considerably beyond those that would be found in the hypothesized LTH threshold.

For children, the ESLR model would have only two levels, and the theoretical order of implementation would be reversed, corresponding to the following sequence: (a) L1 language and reading skill, and (b) L2 language skills. The models differ because the adult model begins with L2 skills, includes variability to account for a wide range of L1 skills available for transfer, and because it contains a third level to account for an additional component of L2 skills germane to academic reading comprehension, such as academic vocabulary, complex linguistic structures, familiarity with the L2 writing genres, and relevant background and cultural information.

Adult ESL students come to ESLR with diverse educational backgrounds, and consequently, a descriptive model needs to build in variability to account for a wide range of L1 literacy and skills. For those ESLR readers with highly developed L1 skills (traditional students), the model would draw heavily on Level 1 and 2, as we can assume that once the L2 threshold is reached, a large number of L1 skills would transfer to ESLR. Because the traditional student would bring many L1 academic skills to the ESLR process, a model to describe this kind of student would not require a great deal of input to develop the advanced skills in Level 3. For ESLR readers with weaker L1 skills (non-traditional students), the L1 transfer would not be able to bring a high level of academic skill to the ESLR process, and the model would be different in that it would have to depend on developing the Level 3 advanced skills more completely to compensate for the lack of L1 skills. These two adult models can predict the profiles of different ESLR readers, as non-traditional students would have a smaller component of Level 2 (transferred from L1), and would consequently require a larger component of Level 3 (acquired in L2) to achieve the goal of good ESLR academic reading. In contrast, traditional students would transfer a large component of Level 2 and Level 3 from L1 and would not have to acquire such a large a component of Level 3 from the L2 to achieve the same reading goals. These two models also predict different rates of development for the two kinds of students, because traditional students would progress at a more rapid rate (indicated by the smaller need to build Level 3 skills), while non-traditional students would require more L2 instruction to develop academic reading (indicated by the necessity to build the Level 3 component). Besides these theoretical predictions, the models also suggest how educational practices might accommodate these two different profiles, as it can be assumed that traditional students could transfer academic proficiency from L1, whereas non-traditional students would need to acquire many of these skills as part of the L2 curriculum.

Conclusion

In any study, the results are only as good as the measures used for assessments. In this study, both the English and Spanish grammar assessments were in a written format. Because the subjects had to use their reading skill to understand the questions and make their answer choices, there is a possibility that grammar performance was affected by the level of reading skill of the participants. However, the results of any grammar test, either written or oral, must inevitably be somewhat confounded with the ability of the subject to understand the prompts, whether they are written or oral. Nevertheless, in interpreting the results of this study, it can be assumed that any effects caused by this problem would be more likely to lower the result of the grammar variance, rather than to exaggerate its importance. And finally, in the discussion of results, it is necessary to be aware that the conclusions drawn from this study are based upon correlations, and although these correlations may be very important to the understanding of the skills involved, correlation can never be presumed to imply causation.

Becoming literate in L2 differs from becoming literate in L1, and theoretical descriptions and educational initiatives need to account for differences in child and adult populations of language learners. By examining the data from the current study, and interpreting them in the context of the LIH and LTH hypotheses, we can suggest that adult models differ from child models in several ways. Adult models begin with the L2, require an additional level to include advanced L2 linguistic knowledge, and need to incorporate more variability to account for the wide range of L1 skills that traditional and non-traditional adult ESLR readers bring to the educational process. Traditional ESLR readers can build reading proficiency by using previously developed L1 reading knowledge to support the newly developing L2 language skills, and so need a smaller component of advanced academic skills (Level 3). The non-traditional ESLR readers have less sophisticated L1 reading knowledge and requires a model that will account for the development of advanced skills in the L2 (Level 3). In other words, the non-traditional student would need to acquire the most academic skills, not from transfer, but from L2 instruction.

Educational strategies are most effective when they respond to the problems and profiles presented by the targeted population, and pedagogical solutions for ESL adults may differ substantially from those proposed for bilingual children. The strategies developed for bilingual children are not always applicable to adults who have weak ESLR or weak L1 skills. For example, providing additional education to develop the L1 is not a reasonable option, as resources and time are generally not available to strengthen adult L1 skills. A more appropriate approach to this problem, as suggested by the models, would be to compensate for the less developed L1 skills by building stronger

L2 academic skills. Although transfer occurs for all ESLR readers, the academic goals of an individual with a weak L1 background are more dependent upon the newly acquired L2 skill and require a curriculum which provides a highly intensive focus on L2 language, grammar, and reading skills. Transfer is a very powerful influence on L2 skills, but many adult ESLR readers need a great deal more than transfer to achieve academic goals. As Detterman (1993) suggests in his book, *Transfer on Trial*, "...if you want somebody to know something, you teach it to them" (p. 15).

References

- Adams, M. J. (1980). Failures to comprehend and levels of processing in reading. In R. J. Spiro, B. C. Bruce, & W. F. Brewer (Eds.), *Theoretical issues in reading comprehension* (pp. 87–112). Hillsdale, NJ: Erlbaum .
- Adams, M. J. (1990). *Beginning to read: Thinking and learning about print* (9th ed.). Cambridge, MA: MIT Press.
- Alderson, J. C. (1984). Reading in a foreign language: A reading problem or a language problem? In J. C. Alderson & A. H. Urquhart (Eds.), *Reading in a foreign language* (pp. 122–135). New York: Ablex.
- Armendariz, A., Cohen, A., Garner, L., Swietlicki, M., Kehoe, D., & Myers, O., et al. (1990). *Spanish: Grammar and reading comprehension, form 901*. Madison, WI: University of Wisconsin Press.
- August, C., Calderon, M., & Carlo, M. (2002). *Transfer of skills from Spanish to English: A study of young learners* (ED-98-CO-0071). Washington, DC: Center for Applied Linguistics.
- August, D., & Hakuta, K. (1998). *Educating language-minority children*. Washington, DC: National Academy Press.
- Balota, D. A., Flores d'Acasis, G. G., & Rayner, K. (Eds.). (1990). *Comprehension processes in reading*. Hillsdale, NJ: Erlbaum.
- Bentin, S., Deutch, A., & Liberman, I. Y. (1990). Syntactic competence and reading ability in children. *Journal of Experimental Child Psychology*, 49(1), 147–172.
- Berkemeyer, V. (1994). Anaphoric resolution and text comprehension for readers of German. *Die Unterrichtspraxis*, 27(2), 15–22.
- Bernhardt, E. B. (1991). *Reading development in a second language: Theoretical, empirical and classroom perspectives*. Norwood, NJ: Ablex Publishing Corporation.
- Bernhardt, E. B. (2000). Second-language reading as a case study of reading scholarship in the 20th century. In P. B. Kamil, P. B. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. III, pp. 545–561). Mahwah, NJ: Erlbaum.

- Bernhardt, E.B., & Kamil, M. L. (1995). Interpreting relationships between L1 and L2 reading: Consolidating the linguistic threshold and the linguistic interdependence hypothesis. *Applied Linguistics*, 16(1), 15–33.
- Bialystok, E. (2002). Acquisition of literacy in bilingual children: A framework for research. *Language Learning*, 52(1), 159–199.
- Bruck, M., & Genesee, F. (1995). Phonological awareness in young second language learners. *Child Language*, 22, 307–324.
- Burt, M., Peyton, J. K., & Adams, R. (2003). *Reading and adult English language learners: A review of the research*. Washington, DC: Center for Applied Linguistics.
- Chall, J. S. (1983). *Stages of reading development*. New York: McGraw Hill.
- Cicero, C. A., & Royer, J. M. (1995). The development and cross-language transfer of phonological awareness. *Contemporary Educational Psychology*, 20, 275–303.
- Clarke, M. (1980). The short circuit hypothesis of ESL reading or when language competence interferes with reading performance. *Modern Language Journal*, 64(2), 203–209.
- Collier, V. P. (1992). A synthesis of studies examining long-term language minority student data on academic achievement. *Bilingual Research Journal*, 16(1–2), 187–212.
- Comeau, L., Cormier, E., Grandmaison, D., & Lacroix, D. (1999). A longitudinal study of phonological processing skills in children learning to read in a second language. *Journal of Educational Psychology*, 91(1), 29–43.
- Cummins, J. (1991). Interdependence of first- and second-language proficiency in bilingual children. In E. Bialystok (Ed.), *Language processing in bilingual children* (pp. 70–89). Cambridge, England: Cambridge University Press.
- Detterman, D. K. (1993). The case for the prosecution: Transfer as an epiphenomenon. In D. K. Detterman & Sternberg, R. J. (Eds.), *Transfer on trial: Intelligence, cognition, and instruction* (pp. 1–24). Norwood, NJ: Ablex.
- Durgunoglu, A. Y., & Oney, B. (1999). A cross-linguistic comparison of phonological awareness and word recognition. *Reading and Writing: An Interdisciplinary Journal*, 11(4), 281–299.
- Durgunoglu, A. Y., Nagy, W. E., & Hancin-Bhatt, B. J. (1993). Cross-language transfer of phonological awareness. *Journal of Educational Psychology*, 85(3), 453–465.
- Education Commission of the States. (2004). *Hispanic achievement* (Vol.6, No. 3). Denver, CO: Author.
- Fitzgerald, J. (1995). English-as-a-second-language reading instruction in the United States: A research review. *Journal of Reading Behavior*, 27(2), 115–152.

- García, G. E. (2000). Bilingual children's reading. In M. L. Kamil, P. Mosenthal, P. D. Pearson, & R. Barr (Eds.), *Handbook of reading research* (Vol. III pp. 813–834). Mahwah, NJ: Laurence Earlbaum.
- García-Vázquez, E., Vázquez, L. A., & López, I. C. (1997). Language proficiency and academic success: Relationship between proficiency in two languages and achievement among Mexican-American students. *Bilingual Research Journal*, 21, 334–347.
- Gaux, C., & Gombert, J. E. (1999). Implicit and explicit syntactic knowledge and reading in preadolescents. *British Journal of Developmental Psychology*, 17(2), 169–188.
- Geva, E., & Wang, M. (2001). The development of basic reading skills in children: A cross-language perspective. *Annual Review of Applied Linguistics*, 21, 182–204.
- Geva, E., Wade-Wooley, L., & Shany, M. (1997). Development of reading efficiency in first and second language. *Scientific Studies of Reading*, 1(2), 119–144.
- Geva, E., & Verhoeven, L. (2000). The development of second language reading in primary children: Research issues and trends. *Scientific Studies of Reading*, 4(4), 261–268.
- Gholamain, M., & Geva, E. (1999). Orthographic and cognitive factors in the concurrent development of basic reading skills in English and Persian. *Language Learning*, 49(2), 183–217.
- Gottardo, A., Yan, B., Siegel, L. S., & Wade-Wooley, L. (2001). Factors related to English reading performance in children with Chinese as a first language: More evidence of cross-language transfer of phonological processing. *Journal of Educational Psychology*, 93(3), 530–542.
- Hakuta, K. (1987). Degree of bilingualism and cognitive ability in mainland Puerto Rican children. *Child Development*, 58, 1372–1388.
- Hakuta, K. (1990). Language and cognition in bilingual children. In A. Padilla, H. Fairchild, & C. Valdez (Eds.), *Bilingual education: Issues and strategies* (pp. 47–59). Newbury Park, CA: Sage Publications.
- Hispanic Association of Colleges and Universities. (2005). *Facts on Hispanic higher education*. Washington, DC: Author.
- Ho, C. S., & Bryant, P. (1997). Phonological skills are important in learning to read Chinese. *Developmental Psychology*, 33(6), 946–951.
- Intersegmental Committee of the Academic Senates. (2002). *Academic literacy: A statement of competencies expected of students entering California's public colleges and universities*. Sacramento, CA: Academic Senate for California Community Colleges.

- Jiang, B., & Kuehn, P. (2001). Transfer in the academic language development of post-secondary ESL students. *Bilingual Research Journal*, 25, 417–436.
- Jiménez, R. T., García, G. E., & Pearson, P. D. (1995). Three children, two languages, and strategic reading: Case studies in bilingual/monolingual reading. *American Educational Research Journal*, 32(1), 67–97.
- Jiménez, R. T., García, G. E., & Pearson, P. D. (1996). The reading strategies of bilingual Latina/o students who are successful English readers: Opportunities and obstacles. *Reading Research Quarterly*, 31(1), 90–112.
- Juel, C., Griffith, P., & Gough, P. (1986). Acquisition of literacy: A longitudinal study of children in first and second grade. *Journal of Educational Psychology*, 78(4), 243–255.
- Karlsen, B., & Gardner, E. (1996). *Stanford diagnostic reading test, form K, purple level*. San Antonio, TX: Harcourt Educational Measurement.
- Klederman, F. (1974). *Linguistic applications to reading comprehension*. Annual Reading Conference of Keen College of New Jersey.
- Koda, K. (1990). The use of L1 reading strategies in L2 reading. *Studies in Second Language Acquisition*, 12, 293–410.
- Koda, K. (1998). The role of phonemic awareness in second language reading. *Second Language Research*, 1(2), 194–215.
- Langer, J. A., Bartolomé, L., Vásquez, O., & Lucas, T. (1990). Meaning and construction in school literacy tasks: A study of bilingual students. *American Educational Research Journal*, 34 (6), 450–455.
- Layton, A., Robinson, J., & Lawson, M. (1998, February). The relationship between syntactic awareness and reading performance. *Journal of Research in Reading*, 21(1), 5–23.
- Pang, E., & Kamil, M. (2004). *Second-language issues in early literacy instruction* (Publication Series No. 1). Stanford, CA: Stanford University.
- Riccio, C. A., Amado, A., Jiménez, S., Hasbrouck, J. E., Imhoff, B., & Denton, C. (2001). Cross-linguistic transfer of phonological processing: Development of a measure of phonological processing in Spanish. *Bilingual Research Journal*, 25, 1–17.
- Royer, J. M., & Carlo, M. S. (1991). Transfer of comprehension skills from native to second language. *Journal of Reading*, 1(6), 450–455.
- Snow, E. (1990). Rationales for native language instruction in the education of language minority children: Evidence from research. In H. Padially, H. Fairchild, & C. Valadez (Eds.), *Bilingual education: Issues and strategies* (pp. 60–74). Newbury Park, CA: Sage.

- Snow, K. E. (2002). *Reading for understanding: Toward a research and development program in reading comprehension*. Santa Monica, CA: Science and Technology Policy Institute, United States Office of Educational Research and Improvement.
- Spann, M., & Stowe, L. (1972). *English placement test, form A*. Ann Arbor, MI: University of Michigan, English Language Institute.
- Stephens, D. S. (1977). Foreign language grammar for reading comprehension: Some hypotheses. *Proceedings of the international conference on frontiers in language proficiency and dominance testing, 1*. Carbondale, IL: Southern Illinois University, Dept. of Linguistics. (ERIC No. ED144401).
- Waltzman, D. E., & Cairns, H.S. (2000). Grammatical knowledge of third grade good and poor readers. *Applied Linguistics, 21*(2), 263–284.